

But is it not obvious (to the unbiased mind) that, if and when the chromosome-map of any species shall have been completed, we shall still be very far from a solution of the problem of heredity (or rather the multitude of problems presented by any one instance of heredity) ? It is a far cry from the gene to the correlated adult feature. Between the two intervenes a vast spatio-temporal network of processes of growth and assimilation and redistribution in space, processes of incredible nicety and complexity, processes going on throughout considerable periods of time, periods of weeks, months, or in some cases years, before the adult feature emerges, takes shape, becomes formed and functional. It is clear that the most complete chromosome-map will leave us still very very far from a complete *description* of the developmental process through which the gene A is somehow linked to the adult feature *a*.

And if description is difficult and hitherto very fragmentary, explanation is very much more difficult.

Consider one of the simpler instances. Gene A, in a certain position in a chromosome, is shown to be correlated with red colour of the two eyes of all fruit-flies that have red eyes. Take further the simplest supposition, the one most favourable to ready understanding—namely, suppose that the gene A is a molecule of a certain chemical constitution, and that the redness of the eyes of the adult fly is due to a pigment consisting of molecules of the same constitution. The first and simplest fact lacking all explanation is the

multiplication
of the molecule A, until from one molecule
come perhaps one thousand exactly similar molecules.
This is a
process of self-multiplication fundamental in
all organic
growth; but it is a process which is, I
believe, unknown